

Application No: 10/779,454

Amendment C

Reply to Office Action Dated May 1, 2007

Attorney Docket No: 3926.063

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IN THE CLAIMS:

The following listing of claims replaces any earlier listing:

1. (currently amended) A door space monitoring device for monitoring a door swing area of a vehicle door, comprising:
 - sensor means for sensing a presence of an object in the door swing area of the vehicle door,
 - a sensor-data evaluating evaluation unit, and
 - a control unit for controlling the sensor means,
 - wherein a monitoring area sensed by the sensor means is substantially two-dimensional, and wherein the sensor means includes at least one light source for emission of a light beam, at least one micro-mirror-unit for pivoting the light beam and at least one photo-detector for monitoring the two-dimensional monitoring area[.];
 - wherein the micro-mirror-unit has at least one micro-mechanical pivotable planar mirror associated with an additional non-planar mirror;
 - wherein the additional non-planar mirror is shaped such that its contour corresponds to the contour of the vehicle door.
- 2-3. (cancelled).
4. (currently amended) The door space monitoring device according to Claim [[2]] 1, wherein the additional non-planar mirror is mounted to be pivotable and is micro-mechanically driven.
5. (currently amended) The door space monitoring device according to Claim 1 in combination with the vehicle door, wherein the light source, the micro-mirror-unit and the photo-detector are provided

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= on or in an external mirror which is attached to the vehicle door, or in an
~~external mirror which is attached to the vehicle door,~~

= on or in a vehicle door handle, or in a vehicle door handle.

6. (currently amended) ~~The door space monitoring device according to Claim 1 in~~ In combination with ~~the~~ a vehicle door, a door space monitoring device for monitoring a door swing area of the vehicle door comprising:

sensor means for sensing a presence of an object in the door swing area of the vehicle door,

a sensor-data evaluating evaluation unit, and

a control unit for controlling the sensor means,

wherein a monitoring area sensed by the sensor means is substantially two-dimensional, and wherein the sensor means includes at least one light source for emission of a light beam, at least one micro-mirror-unit for pivoting the light beam and at least one photo-detector for monitoring the two-dimensional monitoring area;

wherein the light source, the micro-mirror-unit and the photo-detector are provided in an area of a pivot axis of the vehicle door.

7. (previously presented) The door space monitoring device according to Claim 1, wherein the light source, the micro-mirror-unit and the photo-detector are provided in a common housing.
8. (previously presented) The door space monitoring device according to Claim 7, wherein within the housing, the micro-mirror-unit is provided between the light source and the photo-detector, and that off-set to the side thereto, at least one of the control unit and the evaluation unit is provided upon a common circuit board.
9. (previously presented) The door space monitoring device according to Claim 1, wherein the at least one photo-detector is a PIN-diode.

Application No: 10/779,454

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Attorney Docket No: 3926.063

10. (previously presented) The door space monitoring device according to Claim 1, wherein light output of the light source controlled by the control unit is adjusted according to the degree of pivoting of at least one micro-mechanical mirror of the micro-mirror-unit.
11. (currently amended) The door space monitoring device according to Claim [[2]] 1, wherein during a pivot process, pivoting of the at least one micro-mechanical planar mirror of the micro-mirror-unit is controlled by the control unit to pivot at regular intervals over a predetermined pivot range to produce the light beam passing through the two-dimensional monitoring area.
12. (previously presented) The door space monitoring device according to Claim 11, wherein the pivoting over the predetermined pivot range occurs within a time span of less than 5 ms.
13. (currently amended) The door space monitoring device according to Claim 12, wherein between two pivot processes a time span of greater than 25 ms and preferably less than 50 ms occurs.
14. (currently amended) The door space monitoring device according to Claim 12, wherein the control unit is so designed, that the light source and ~~preferably also~~ the photo-detector are activated essentially ~~only during the pivot process, preferably only during each n-th pivot process with n being less than 10.~~
15. (previously presented) The door space monitoring device according to Claim 1 in combination with the vehicle door, wherein the light source, the micro-mirror-unit and the photo-detector are so arranged, that the distance of the two dimensional monitoring area from the vehicle door essentially also increases with increasing distance of the two dimensional monitoring area from the pivot axis of the vehicle door.

Application No: 10/779,454

Amendment C

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Attorney Docket No: 3926.063

16. (previously presented) The door space monitoring device according to Claim 1, wherein the light source, the micro-mirror-unit and the photo-detector are provided in a common housing together with the evaluation unit for distance measurement by a phase delay process.
17. (currently amended) The door space monitoring device according to Claim 16, wherein the evaluation unit is adapted to carry out on the basis of ~~reference values~~, preferably a lookup table stored in a memory, corresponding to a shape or design of the vehicle door, an evaluation of ~~a potential~~ the detected obstacle object to determine if the ~~obstacle~~ object will damage the door.
18. (currently amended) The door space monitoring device according to Claim 1, wherein dependent upon the detection of ~~an obstacle~~ the object in the door swing area, at least one of the following actions is taken:
- a warning signal is emitted,
 - a further automatic opening of the vehicle door is interrupted, or
 - a further opening of the vehicle door is actively prevented.